



Pollution Prevention (P2)

Fact Sheet

Utah Department of Environmental Quality

Promoting a Healthy Environment

The Pollution Prevention Act of 1990 establishes pollution prevention (P2) as a national objective. There are numerous opportunities for business to reduce pollution at the source, however, these are often not realized because existing regulations focus upon treatment and disposal rather than prevention. The act creates the pollution prevention hierarchy which states that pollution should be prevented or reduced at the source when ever possible, while pollution that cannot be prevented should be recycled in an environmentally safe manner. If recycling is not feasible pollution should be treated. Disposal or other release to the environment should be use as a last resort.

What is Pollution Prevention or Source Reduction?

According to EPA," P2 is source reduction and is defined as any practice which reduces the amount of any hazardous substance, pollutant or contaminant entering any waste stream or otherwise released into the environment (including fugitive emissions) prior to recycling, treatment or disposal; and which reduces the hazards to public health and the environment associated with the release of such substances, pollutants, or contaminants. P2 or source reduction also includes equipment or technology modifications, process or procedure modifications, reformulation or redesign of products, substitution of raw materials, and improvements in housekeeping, maintenance, training, or inventory control." In short, P2 means not creating waste in the first place. All activities that avoid, eliminate or reduce the creation of waste at its source prevent pollution. Also, some practices identified as closed-loop, or in-process recycling, may be classified as P2.

What is Not P2?

Waste burning: Waste burning in furnaces, boilers, smelters or cement kilns for the purpose of energy recovery.

Waste shifting: The transfer of waste from one environment medium to another.

- **Off-site recycling:** Off-site solvent recovery or sending used oil, antifreeze or other material off-site for reclamation.
- **Treatment:** Sending water to a waste water treatment plant to remove contaminants prior to disposal or other treatment devices such as an air stack scrubber.
- **Disposal:** Disposing of waste in an incinerator or landfill.

Why P2?

Prevention or source reduction at a facility will result in both environmental and economic benefits. Environmentally, the benefits of this approach are reduced public and worker exposure and improved environmental health. The economic benefits can include such things as reduced operating costs, savings from reduced need for pollution control equipment, elimination of waste transportation, storage and disposal costs, and reduced compliance costs, as well as reduced liability from waste disposal and improved public image.

- Stimulates reinvestment and enhances competitiveness.
- Reduces government regulatory involvement.
- Reduce risk of spills, accidents and emergencies.
- Increases environmental protection.
- Maintains inventory control.
- Reduces waste shifting.
- Saves money.

P2 is good business. While most pollution control strategies cost money, P2 has saved many firms thousands of dollars in treatment and disposal alone.

P2 Techniques

The most effective way to reduce wastes is for a business to generate less waste in the first place. Business can adopt a wide range of waste prevention strategies but generally P2 is achieved through three basic strategies. The first method is inventory management and improved operations. Measures included in this category are: inventorying and tracing all raw materials; instituting purchasing controls that favor non-hazardous materials over hazardous ones; and improving material receiving, storage, and handling practices. The second category of opportunities includes modifying and redesigning equipment to enhance recovery and recycling; improved operating efficiency of equipment, and establishing strict preventive maintenance program. Several production process changes are also available, including substituting non-hazardous for hazardous materials; segregating waste for recovery; separating hazardous and non-hazardous wastes to prevent contamination and eliminating sources of leaks and spills.

Management Support

The support of company management is essential for developing a lasting and successful P2 program. This commitment should be passed on to employees, especially those working in areas that generate hazardous waste. Employees are one of the best resources of P2 ideas and their participation should be actively encouraged. Management approaches may include the following:

- Make P2 a part of the company policy. P2 should be a process of continuous improvement.
- Set explicit goals for reducing the volume and toxicity of waste streams, such as a reduction of 25% within the first year.
- Commit to implementing recommendations identified through assessments, evaluation by

P2 teams

- Reward employees who identify cost-effective P2 opportunities. These rewards can be monetary or honorary and will encourage employees to develop and implement P2 options.
- Train employees in P2, hazardous waste and hazardous material handling and emergency response.

Waste Assessments

A waste assessment is essential component of most P2 programs. The data generated in an assessment can provide a much greater understanding of the types and amounts of waste generated. These assessments may identify sources of waste by tracking material that eventually wind up as waste. The assessment may be in the form of a mass balance where calculations to determine inputs and outputs from processes and facilities. Most successful P2 assessments that identify sources of wastes and calculate the true cost of waste generation and management.

Operative Practices/Housekeeping

A little extra attention paid to “minor” sources of waste can result in major reductions. Improved housekeeping practices, system adjustments, process and product inspections and the use of production unit control equipment and methods are often successful P2 practices.

- Inspect and repair equipment to reduce waste caused by equipment breakdown, leaks and spills.
- Contain leak and spills by using drip trays and splash guards.
- Keep containers closed except when material is added or withdrawn.
- Segregate different kinds of waste to increase opportunities for recycling and reduce the volume of hazardous waste.
- Utilize a “first-in-first out” inventory policy to avoid losses due to expirations.

Material Substitution/Input Change

Disposing of hazardous waste has become expensive. It makes sense to substitute less hazardous materials whenever possible.

- Use water soluble cleaning agents in place of organic solvents and degreasers.
- Often a company can minimize hazardous waste or avoid generating them altogether by using non-hazardous or less-hazardous materials to produce products.

Product Substitution

Some companies become so motivated in P2 that they change the products they produce in order to employ nonhazardous production processes.

- Changing the design, specifications or composition of an existing end product to reduce the need for toxic materials.

Process Modification

Inefficient or outdated production processes that could be sources of hazardous waste generation can be upgraded or replaced by a more efficient process.

- Changes in placement order of equipment.
- Equipment modification.
- Changes in operation settings and schedules.
- Process automation.

This fact sheet pinpoints strategies and areas in which to reduce or eliminate the use of hazardous materials and the resulting generation, discharge, and disposal of hazardous wastes in industry. This document is intended to stimulate interest and ideas from individuals in industry who are responsible for the use of hazardous materials and wastes in their field. Each of the P2 practices in this fact sheet is an extension of the simple but powerful idea that makes far more sense to eliminate the generation of waste than to develop complex and costly treatment schemes once it has been generated.

For More Information, Contact:

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